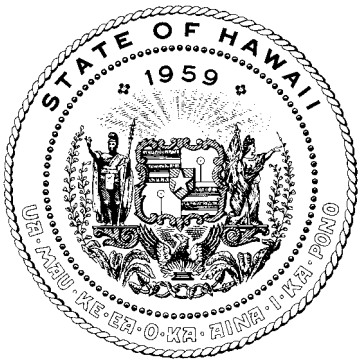
ANNUAL REPORT TO THE TWENTY-SECOND LEGISLATURE

REGULAR SESSION OF 2003

RELATING TO THE FOREST STEWARDSHIP PROGRAM



Prepared by

THE STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE

In response to Section 195F-6, Hawaii Revised Statutes

Honolulu, Hawaii
November 2002

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PURPOSE

This annual report complies with Act 327, Session Laws of Hawaii (SLH) 1991, now §195F-6, Hawaii Revised Statutes (HRS), and covers specific topics relating to the Forest Stewardship Program (the Program) within the Department of Land and Natural Resources (the Department). Act 195, SLH 1993 established a dedicated funding source as a percentage of annual Conveyance Tax revenues that is deposited into the Natural Area Reserve Fund. The Department currently has the authority to use $500,000 per year to fund approved Forest Stewardship projects. This report covers actions taken through June of 2002 as required to implement the statutory provisions of the Program.

BACKGROUND

The Forest Stewardship Program became effective in July 1991 through Act 327 of the 1991 State Legislature. The Act authorizes the Department to provide state funds to financially assist private landowners to manage, protect, and restore important natural forest resources on their forested and formerly forested properties. The Program enables private landowners to restore and actively manage important forest resources throughout Hawaii, that provide important socioeconomic and environmental benefits and services. Private landowners own approximately one half of Hawaii's remaining forest areas and by establishing the Forest Stewardship Program, the State recognized that public-private partnerships are essential to the present and future conservation and health of our valued forest resources, and Hawaii's natural environment as a whole. With the demise of Hawaii's primary agricultural industries, sugar and pineapple, the Program is functioning increasingly to encourage investment in forestry as a promising, economically viable land-use alternative that will supply a still small, but rapidly developing hardwood timber industry. Several thousand acres of healthy young high-value timber plantations are now growing on formerly fallow and degraded agricultural land that was reclaimed as a direct result of Program assistance. The majority of landowners who are enrolled in the Program would clearly not have been able to pursue their innovative land-use objectives, without the technical and financial assistance that has been offered to them through the Program. In addition, the Program has provided successful land use demonstrations in a variety of environmental and socio-economic situations, encouraging many more landowners to adopt forest management practices on their properties.

The success of the Forest Stewardship Program is due largely to its inclusion of a wide variety of landowner types and its ability to address a full array of forest management problems and opportunities in a range of local contexts. Management areas currently range in size from 5 to 3,700 acres and management objectives include high-value timber production, agroforest crop production, watershed restoration, native forest restoration, and the provision of educational and recreational opportunities. All funded projects are in some way contributing to the overall health

and productivity of Hawaii's forests and enhancing their publicly derived benefits such as economic diversification, local employment opportunities, and the provision of high-value wood for local processing.

PLANNING and MANAGEMENT

The Department continues to identify ways to more effectively address landowner and state needs, while maintaining accountability and furthering the overall, long-term objectives of the Program. The Program's "Five Year Plan", included as **Appendix 1**, outlines strategies for expanding the Program's environmental and economic impacts, and increasing landowner participation.

The Forest Stewardship Program follows the State procurement law by publishing in a newspaper of general circulation, an annual legal notice "Request for Proposals". The Hawaii Forest Stewardship Advisory Committee reviews all landowner applicant proposals and management plans, and recommends those that are eligible and worthy of assistance, to the Board of Land and Natural Resources.

All successful applicants enter into formal Forest Stewardship contract agreements with the Department for a term of no less than ten years. Contract agreements clearly define applicant responsibilities and provide mechanisms to ensure applicant accountability.

Forest Stewardship contract agreements also require Governor's approval through the Department of Budget and Finance, Chairperson's (of the Board of Land and Natural Resources) approval for multi-term contracts, Department of Accounting and General Services (DAGS), Pre-audit Division formal contract encumbrance approval, employer-employee approval, landowner tax clearance certifications at the start and end of the state fiscal year, and the Department of the Attorney General's contract approval as to form.

Forest Stewardship contract agreements that involve commercial timber production include a "payback provision" clause, that requires Program beneficiaries to return a percentage of Program funds received, to the State, with each commercial timber harvest. In this way, applicants who benefit economically from the Program are able to contribute to its future and assist other applicants with similar objectives. In addition, those who establish commercial forest plantations agree in their contracts, to payback to the State all cost-share assistance received, if they sell their project properties before they harvest the timber that they established with Program assistance.

All landowner participants must commit, in their Forest Stewardship contract agreements, to following the Department's currently approved Best Management Practices (BMP's), when preparing project sites for planting and when harvesting any trees that are planted with Program assistance. All Forest Stewardship projects are currently being inspected to verify compliance

with this requirement. If commercial timber production is a management objective, participants must also, in adherence with Chapter 343, HRS, prepare an environmental assessment.

The Department's professional forestry staff is available to applicant landowners on a continuous basis, providing technical and programmatic guidance as needed. Landowners receive cost-share payments as reimbursements only after they complete and report on specific management practices as described in their approved management plans, and only after practice completion has been confirmed by Department staff following a visit to the project site. Landowners are required to submit written reports in a standard format, with all related cost documentation to the Division each six months for the life of their project. All projects are periodically assessed, monitored and audited by Division staff, for adherence to approved budgets, program guidelines and approved management plan specifications.

PROGRAM DEVELOPMENT/OUTREACH

The Department has continued to address Program goals and assist applicants with Forest Stewardship Management Plan development and implementation. The Program has also continued in its efforts to educate the public with regards to the important environmental and economic benefits that our forest resources provide, when responsibly managed, and the need for partnerships with private landowners who are responsible for the management of so many of our valuable forest and watershed areas.

The Department continues to work successfully with other federal, state county agencies on all major islands to deliver assistance and information to landowners in appropriate forms as needed. The Department's Cooperative Resource Management Forester communicates directly with several landowners each day who have forest management concerns or questions regarding the Program. The Department has distributed several hundred handbooks, fact-sheets and brochures to landowners and government agencies on all islands. In addition, each year Forest Stewardship workshops are held on each island. These workshops are successful in attracting primarily smaller landowners who may not otherwise have known about or understood the Program. The Department also prints Program news updates in relevant agency and organization newsletters, and periodic press releases, to inform potential landowner participants. The Department will continue to advertise the Program to reach out to landowners with various stewardship objectives on all islands.

The Hawaii Forest Stewardship Handbook is regularly updated and provided to all landowners and resource professionals who are interested in the Program. The Handbook contains information about program eligibility, enrollment and fiscal procedures, management plan requirements and specifications, practice criteria for cost-share assistance, practice specification guidelines, and accomplishment and reporting requirements. The Handbook is currently also available online on the Department's web page at www.dofaw.net in the Forest Stewardship Program link.

The Program has always strived to emulate environmental stewardship and economically productive land use, through well-publicized and closely monitored public-private partnerships. Most recently the Department constructed a database of all known private forestry projects in Hawaii that provides a forum for information exchange and current case studies in forestry, for landowners throughout the State who may be considering forest management options. The database is easily accessible to the public on line on the Department's web page at www.dofaw.net in the Forest Stewardship Program link.

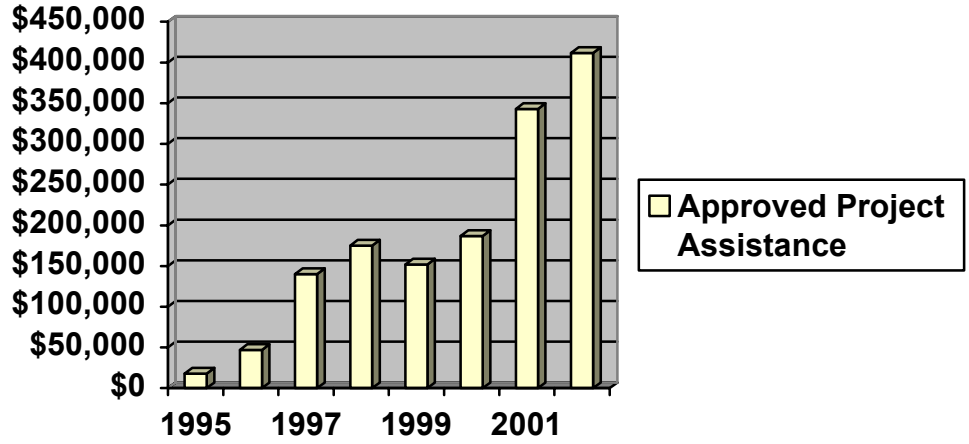
In compliance with Chapter 343, HRS, the Department is able to inform the public regarding the use of public funds to promote private forest stewardship. Notice of quarterly Forest Stewardship Advisory Committee meetings is published in the Office of Environmental and Quality Control (OEQC) bulletin to provide an opportunity for public comment and review of agenda items including projects that are being considered for funding.

ACTIONS

There are currently more than 11,000 acres of private forest land in Hawaii that are being successfully managed for a variety of private and public forest products and benefits, as a result of Forest Stewardship Program assistance. To date, the Department has entered into formal Forest Stewardship contract agreements with twenty-eight landowners on the Islands of Kauai, Oahu, Lanai, Molokai, and Hawaii. In addition, the Department has assisted more than forty landowners to achieve their forest management objectives with federal Stewardship Incentive and Forestry Incentive Program funds. Most projects have been quite successful and there have been no contractual defaults. For a concise listing of projects, see Appendix 2.

Landowners sometimes experience difficulty following their planned practice implementation schedules due to temporary financial hardship or drought conditions that preclude site preparation and planting activities, but bad years are most times balanced by good years during which projects progress more rapidly than planned. Although most Forest Stewardship contract agreements with the State formally terminate after ten to fifteen years, the benefits of the management made possible through the program will continue to accrue for decades. Brief descriptions of all ongoing and maintained projects are included as Appendix 3.

The following table illustrates landowner demand for the Program, and thus funding needs have risen since the Program's establishment.



The forest management accomplishments made possible with assistance from the Forest Stewardship Program are providing a variety of social and environmental benefits. Participating landowners provide valuable information concerning successful forest management techniques such as site preparation, planting, species selection and seedling maintenance. Through written progress reports, site visits and even casual interactions with participating landowners, projects are generating a wealth of practical information that can be used by other landowners who may be inclined to pursue similar endeavors.

The thousands of acres of forest cover being established and/or maintained, largely on formerly degraded pastures or sugar plantations, serve to enrich soils, reduce erosion, restore and protect important watersheds, and provide habitats for many wildlife species. Landowners who are producing high-value timber for local industry are also making a valuable contribution to the development of Hawaii's forest industry, and a more diversified economy.

In addition to cost-share assistance, the Forest Stewardship Program is providing landowners with a support network, that includes experienced professional foresters and other landowners who have similar ambitious and innovative, yet realistic forest management objectives, and are eager to share their forest management experiences.

PROGRAM CONSTRAINTS

1. Project Implementation Delays

For a variety of reasons, some landowners are not able to adhere to their project implementation schedules as defined in their Forest Stewardship contract agreements. Some have problems obtaining tree seedlings or necessary equipment. Some are faced with environmental conditions such as drought, which hinder their progress. Others simply find that they were too ambitious when planning the establishment phase of their

project. All amendments to management plan budget schedules currently require Department and Governor's approval. Tax-clearance requirements have also stalled reimbursements and thus project progress.

2. Environmental and Cultural Assessments

The use of public funds for Forest Stewardship projects trigger the requirement for an environmental assessment (EA). Previously, most tree planting activities could be tied to the Department's list of activities that are exempt from the EA requirement. In December of 1996, however, the OEQC ruled that commercial forestry projects could no longer be exempted from the requirements. Landowners who plan to harvest the trees they plant with Program assistance are now required to prepare EA's. EAs must include detailed descriptions of tree planting activities, as well as descriptions of proposed harvesting prescriptions. Adherence to this new requirement has proven difficult in some cases, since harvesting plans are usually not prepared until a forest plantation nears maturity-when all necessary information affecting harvesting decisions is obtainable. Also, landowners are routinely asked to explain, in their final EA's how they will mitigate possible impacts on the very resources that they have created as a result of their stewardship efforts. For example, landowners who establish productive, healthy forests on degraded agricultural or pasture land are commonly asked to detail how they will mitigate impacts on wildlife species such as the Hawaiian hoary bat, when doing any future management or harvesting. Since the net impact on all wildlife and natural resources is obviously positive with most Forest Stewardship projects, it seems unreasonable to require that landowners limit or change their plans to completely mitigate any possible adverse impacts. In addition, many landowners feel that it is unreasonable to ask for EA's related to harvesting activities, because the Forest Stewardship Program does not provide cost-share assistance for tree harvesting activities.

Although this adherence to requirement benefits the Department, by providing a mechanism for additional input and increased public awareness, it can create difficulties for landowner applicants already faced with an arduous enrollment process. All Forest

Stewardship projects are planned to provide a net environmental benefit, and in many cases the EA requirement seems unnecessary.

4. Program Objective Misconceptions

The Forest Stewardship Program, and some specific projects have faced opposition, because of misconceptions about the Program's purpose and objectives. The Program was established to support owners of small and large forest properties, so that they can successfully pursue a wide variety of forest management objectives, and to demonstrate the feasibility of integrating what many incorrectly assume are mutually exclusive land use activities. Private landowner participants succeed, and the public benefits, when economic and environmental objectives are sensibly integrated into

comprehensive multi-resource management plans, such as those supported by the Program.

The Program recognizes that a diversity of landowner types, and widely divergent scope of responsible management activities is, when considered in sum, having a significant impact on the overall health of our natural environment and our economy.

APPENDIX 1

HAWAII'S 5-YEAR FOREST STEWARDSHIP PLAN

I. INTRODUCTION

The Hawaii State Forest Stewardship Program provides technical and financial assistance to owners of nonindustrial private forestland, or formerly forested land, who are committed to the restoration, stewardship, enhancement and/or conservation of their forest resources. The information and assistance provided to landowners through the Forest Stewardship Program, enables them to understand and implement management practices that will enhance and sustain the timber productivity, wildlife habitat, water quality, recreational values and/or native resource values of their forest properties.

The Forest Stewardship Program was adopted through Act 327 as enacted by the 1991 State Legislature. The Department of Land and Natural Resources (Department), Division of Forestry and Wildlife (Division) administers this Program under advisement from the Forest Stewardship Advisory Committee (Committee). The Committee is made up of resource professionals, state and federal agency program managers, and private landowners.

State funds are provided on a cost-share basis to private landowners throughout Hawaii, who implement Forest Stewardship Management Plans that have been approved by the Forest Stewardship Advisory Committee and the Board of Land and Natural Resources.

Landowner Eligibility

To be eligible for the State Forest Stewardship Program, applicants must own at least 5 contiguous acres of forested, or formerly forested land, that they intend to manage according to an approved Forest Stewardship management plan. Applicants who hold long-term leases (>10 years) are also eligible. Landowners of adjacent holdings of less than 5 acres may be eligible, if the combined acreages to be managed form a contiguous area of 5 acres or greater.

Applicants may be individuals, joint owners, private groups or associations, or corporations.

II. HAWAII'S FOREST RESOURCES

Forest Coverage and Composition

The Hawaiian Islands support a wide variety of forest types, ranging from low elevation tropical rain forests to arid scrub forests to temperate subalpine woodlands to cloud forests. These forests still cover roughly 1.7 of Hawaii`i's 4.1 million acres, or about 41 percent of the state's total land area. Approximately 60 percent of this area is considered to be productive, healthy forest, covered primarily by ohia (*Metrosideros polymorpha*), ohia-koa mix and relatively pure koa (Acacia koa).

About 700,000 acres, or roughly 50 percent of Hawaii's relatively productive forest land are considered to be timberland, capable of producing timber and wood products on a sustainable basis. Only about 60,000 of these acres are currently being used for plantation forestry.

Because of historic watershed protection activities, Hawaii's upland forests remain relatively intact. However, the encroachment of invasive non-native plant species into native forest areas continues at rather alarming rate. Koa (*Acacia koa*) and ohia (*Metrosideros polymorpha*) dominate native forest areas, while mamane (*Sophora chrysophylla*) and naio (*Myoporum sandwicense*) appear more at higher elevations. Many lowland forest areas have been degraded by frequent wildfires and overgrazing, and non-native plants such as koa haole (*Leucaena leucocephala*) and kiawe (*Prosopis pallida*) have come to dominate the landscape.

In general, there are 4 native and 5 introduced forest cover types in Hawaii: 1) ohia/hapuu; 2) koa/ohia; 3) mamane/naio; 4) a mixture of species comprising the native dry land forest; 5) eucalyptus (Eucalyptus spp.); 6) mixed introduced hardwoods; 7) guava (Psidium catleianum); 8) kiawe/Leucaena; and 9) mixed conifer plantations.

Forest Uses and Values

Hawaii's forests provide a multitude of important services and benefits. Most notably, they enhance and protect watersheds that are critical to all island inhabitants. They also provide and array of wood and non-wood products, unique habitat for rare and endangered species, and a number of recreational opportunities including public hunting.

Although forests still cover almost half of Hawaii's land area, many are in a state of decline due to land uses which prevent natural regeneration and result in the displacement of native forest species by invasive non-native introductions. This situation has historically been exacerbated by county property tax structures that encouraged forest conversion to agricultural land uses such as pasture. In addition, it has been difficult to control Hawaii’s ubiquitous feral ungulate populations in ways that are both effective and acceptable to its large, well organized hunting communities. Feral ungulates browse and knock down young tree seedlings or dig up the forest floor, destroying natural regeneration. Complete removal of these animals is not an acceptable alternative because hunting has become an important part of Hawaii’s culture and many depend on its contribution to their subsistence.

The Forest Stewardship Program, along with innovative new tax codes in Hawaii and Kauai counties, encourages owners of pasture land and former sugar plantations to pursue forestry as an alternative, potentially more profitable land use. In addition, federal landowner assistance programs such as the Wildlife Habitat Incentives, the Forestry Incentives and the Environmental Quality Incentives Programs currently encourage private landowners, through cost-share assistance, to improve and manage their forest resources. As more and more landowners explore forestry as a viable, environmentally sound land use alternative, opportunities and benefits are becoming more apparent, and a new industry is forming.

Convincing hunters of the need to exclude feral ungulates from large tracts of forested land remains a formidable challenge. However, progress is being made in some areas. On Lanai, the hunting community is supporting a Forest Stewardship Management Plan that includes a perimeter fence to enclose 3,500 acres on Lanaihale, the islands only watershed.

Landowners who enroll in the Forest Stewardship Program seek assistance to restore or re-establish forest resources or values on their properties according to their individual land-use objectives. Some landowner participants want to re-establish forests on degraded pasture areas for the purposes of timber production and/or wildlife habitat enhancement. Others are attempting to reclaim degraded watersheds or simply to restore the health of native forest areas that have been invaded by non-native plant species. Others intend to combine forestry practices with current land uses such as orchard or agricultural crop production, in order to achieve more ecological and economic diversity. Although all private landowners are naturally concerned primarily with their own objectives, Forest Stewardship Projects must produce significant public, as well as private benefits.

III. DIVISION OF FORESTRY AND WILDLIFE PROGRAM

The Division has a legal mandate to manage public lands for social, environmental and economic purposes. It has direct responsibility for approximately 800,000 acres of state trust lands which it manages through an integrated system of forest and natural area reserves; plant and wildlife sanctuaries; and wilderness and game management areas. The Division accomplishes its mission with a comprehensive five point strategy:

1. Watershed Protection
2. Native Resources Protection
3. Outdoor Recreation Resources
4. Forest Products Resources
5. Public Information & Stewardship

A strong emphasis on the conservation of natural resources is evident both in the historic placement of large areas in Forest Reserves and the current availability of resources to private landowners for forest conservation and management activities. Approximately one half of the forested land in Hawaii belongs to private landowners. The Division thus recognizes that private lands and landowner actions are indispensable in meeting Hawaii's overall natural resource management objectives and that cooperation with landowners is far more productive than restrictive zoning and regulatory control.

The Division administers a number of cooperative programs that support landowners who are committed to the stewardship of their forest resources. The newest programs and policies promote forestry as an alternative, environmentally sound form of agriculture. All programs encourage and support native forest restoration and sustainable timber plantation establishment and management on former pasture, sugar and pineapple lands, while striving to reduce pressure on remaining, relatively intact, native forests.

The USDA Forest Service provides the Division with financial assistance to administer the Forest Stewardship Program, and a number of other Cooperative Forestry Assistance Programs including Conservation Education, The Hawaii Forestry and Communities Initiative, Urban and Community Forestry, Forest Health Management, Resource Conservation and Development and Rural Fire Prevention and Control. The Division collaborates closely with a number of local organizations to implement these programs including: the Hawaii Forest Industry Association; the Hawaii Nature Conservancy, the Big Island, Tri-Island and Garden Island Resource Conservation and Development Councils; and the Society of American Foresters. Other cooperative partnerships have been formed with state and federal government agencies including the University of Hawaii Cooperative Extension Service, The Department of Agriculture, The USDA Natural Resource Conservation Service, the USDA Farm Service Agency and the USDI Fish and Wildlife Service.

IV. THE FOREST STEWARDSHIP ADVISORY COMMITTEE

The Committee was established to assist the Division and the Board of Land and Natural Resources in administering the Forest Stewardship Program. The Committee meets quarterly to review Forest Stewardship proposal and plan submittals, and to advise the Division and Board on program planning, implementation and policy issues. The Committee also periodically reviews the State 5-year Forest Stewardship Plan and the Hawaii Forest Stewardship Handbook. The 14-member Committee is currently chaired by the Director of the Hawaii Association of Conservation Districts. The membership includes: representatives of local, state and federal government agencies; consulting foresters; representatives of environmental and conservation groups; forest products industry representatives; and private landowners. A list of currently acting Committee members and terms is provided below:

Michael Tulang, Chair	
Hawaii Association of Conservation Districts	July 2002 to June 2004
Rebecca Alakai	
Department of Hawaiian Homelands	July 2002 to June 2004
Fred Bell	
USDA Forest Service	July 2001 to June 2003
Bill Cowern	
Hawaiian Mahogany Co., Inc	July 2002 to June 2004
John Edson	
Hawaii Reforestation, LLC	July 2001 to June 2003
J.B. Friday	
UH-CTAHR, CES	July 2002 to June 2004
Katie Friday	
USDA Forest Service	same as Fred Bell
Bob Joy	
USDA Natural Resources Conservation Service	July 2001 to June 2003
John Ray	
Hawaii Leeward Planning Conference	July 2001 to June 2003
Bill Sager	
The Conservation Council of Hawaii	July 2001 to June 2003
Joshua Stanbro	
The Trust for Public Land	July 2002 to June 2004
Carol Terry	
DLNR-DOFAW	July 2002 to June 2004
Ronald Walker	
USDI Fish and Wildlife Service	July 2002 to June 2004
VACANT	
Hawaii Forest Industry Association	

V. HAWAII'S FIVE-YEAR FOREST STEWARDSHIP PLAN (2001 - 2006)

Goals, Objectives and Strategies

Hawaii's Forest Stewardship Program has expanded rapidly since its establishment. As of January, 2001, more than forty landowners have received program assistance and roughly 7,000 acres of forestland are being managed according to approved Forest Stewardship management plans.

During the next five years, the Division of Forestry and Wildlife will continue to identify opportunities for forest stewardship on private lands throughout Hawaii, while working with the Forest Stewardship Advisory Committee and the Board of Land and Natural Resources to improve overall program effectiveness.

Program activities will target the following specific objectives:

1. **Restore, enhance and conserve the values and benefits of Hawaii's forests:**

   - Restore, enhance and conserve native forest species and ecosystems by using native species where possible and discouraging the use of potentially invasive non-native tree and herbaceous plant species.
   - Restore, enhance and conserve forested watersheds.
   - Restore, enhance and conserve the economically productive value of forests for timber production, traditional non-wood products, and recreation.
   - Restore, enhance and conserve native wildlife habitats.
   - Minimize the risk of wildfires, pests and diseases in project areas.
   - Encourage the planting of native and non-invasive introduced high-quality hardwoods for eventual harvest to reduce the demands placed on naturally occurring native timber species.
   - Encourage private nursery/landscape industry production of native and non-invasive tree seedlings

and plant materials and develop assistance strategies where appropriate.

- Encourage the planting of tree species that meet local demands for fuel, fiber, craftswood and sawtimber.

2. Adequately expand landowner and acreage enrollment:

- Enroll at least 12 landowners per year and develop corresponding management plans.
- Increase acreage under Program management to 15,000 acres by the year 2006.
- Conduct a series of private landowner workshops on all major islands each year.
- Promote the program through news releases, mailings and participation in landowner workshops, seminars and meetings.

3. Promote ethnic, geographical and scale diversity among program participants through public awareness campaigns.

4. Continuously tailor the program to meet changing landowner constraints, needs and objectives:

- Periodically assess appropriateness of program guidelines and requirements in light of comments from landowner participants and branch service foresters.
- Revise the Hawaii Forest Stewardship Handbook.
- Periodically adjust allowable cost-share (hold-down) rates to reflect changing real costs/prices.

5. Develop and disseminate practical forest management information that is useful to program participants and all private forest owners and industry people throughout the State:

- Develop more effective project monitoring methods and record keeping system.
- Promote and facilitate information exchange between program participants.

- Maintain and distribute detailed project summaries that include useful forest management information.
- Publish Forest Stewardship Program web-page that includes "demonstration forest" database of all ongoing private landowner forest projects in the state.

6. **Increase landowner ability to assess forest resources and identify forest management strategies to achieve individual forest management objectives:**

   - Liaison between program participants, service foresters and the technical staff of various resource management agencies.
   - Provide information and technical assistance to landowners on continuous basis as requested.
   - Publish Forest Stewardship Program web-page that includes "demonstration forest" database of all ongoing private landowner forest projects in the state.

7. **Improve quality of Forest Stewardship Management Plans:**

   - Identify all resource management professionals who are qualified and willing to write Forest Stewardship Management Plans of acceptable professional standard.
   - Develop, distribute, and periodically update roster of resource professionals identified above.
   - Conduct yearly workshops to enhance management plan-writing skills of resource management professionals and landowners and to clarify current program guidelines and requirements.
   - Distribute Hawaii Forest Stewardship Handbook that contains all management plan writing guidelines and program requirements.
   - Encourage landowners to seek accurate economic and income projections based on supported assumptions if timber production is an objective.
   - Enlist assistance of UH-Manoa Cooperative Extension Specialist and Division's branch service foresters to

help landowners and consultants to develop their Forest Stewardship management plans.

Program Focus

The Hawaii Forest Stewardship Program will continue to provide financial and technical assistance to owners of non-industrial private forest land throughout the Hawaii. As more landowners apply to the Program and funding becomes limiting, it will be necessary to focus on those projects that will most effectively and efficiently contribute to the achievement of all program objectives. To this end, The Committee will maintain and periodically update a set of guidelines for reviewing Forest Stewardship proposals. Such guidelines have in the past pertained primarily to potential public benefits, economic potential, forest health improvement, and management practice innovation. The Program will always strive to identify and support landowners with specific and achievable objectives that will somehow contribute to Hawaii's economic and resource needs.

APPENDIX 2

Forest Stewardship Projects as of December, 2002

Name of Project/Landower	Date Enrolled	Total Funded	Landowner Match	Location	Size (Acres)	Management Practices
Allan Batesole	25-Feb-00	$15,018	$24,932	Anahola, Kauai	7	high-value hardwood production
(John Edson, Consultant)						understory crops
Castle & Cooke Resorts, LLC	25-May-01	$750,000	$1,683,034	Lanaihale, Lanai	3,588	native forest/watershed restoration
(Darrell Stokes, Manager)						
Mary Doug	28-Jul-01	$10,240	$11,189	Ninole, Hawaii	16.9	native forest restoration
(Courtney Murrill, Consultant)				(Hamakua Coast)		silvopasture
Hawaii Rainforest Sanctuary	8-Mar-02	$190,000	$190,000	Kaloko Mauka	65	native forest restoration
(Norman C. Bezona, Landowner)				Hawaii		education
Kopua Native Forest	22-Jun-01	$76,040	$179,251	Kopu Farm Lots	40	native forest restoration
(Laura Brezinsky, Manager)				Mountain View, Hawaii		educational Trails
Kainalu Ranch	12-Jan-01	$289,186	375,339	Kainalu Ahupuaa	141	high-value hardwood production
(Kip Dunbar, Landowner)				Eastern Molokai		native forest restoration
Shane & Chris Fox	30-Apr-98	$20,763	$35,270	Papaaloa	17.08	high-value hardwood production
(Charles Wakida, Consultant)				(Hamakua Coast)		understory crops
Green & Russo	25-Jan-02	$34,549	$38,539	Papaaloa	16.51	high-value hardwood production
(John Edson, Consultant)				(Hamakua Coast)		
Honouliuli Preserve	25-Oct-02	$670,951	0	Waianai Mountains	3,692	native forest/habitat restoration
(The Nature Conservancy)						

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Hamakua Hardwoods	11-May-01	$29,226	$29,226	Papaaloa	17.15	high-value hardwood production	
(Christian Giardina, Landowner)				(Hamakua Coast)			
Hawaiian Mahogany, Inc.	30-Jan-98	$708,238	$1,762,334	Koloa, Kauai	1600	high-value hardwood production	
(Bill Cowern, President/Manager)							
H&G Koa Enterprises, Inc.	5-Jun-98	$32,828	$40,459	Paauilo, Hawaii	13.47	Acacia koa timber production	
(Gwendolyn Hill, Manager)				((Hamakua Coast)			
Kalopi Reforestation	26-May-94	$38,020	$38,020	Kawaihae Uka	65	native forest restoration	
(Will & Judy Hancock)				(North Kohala Mauka)		silvopasture	
Kapaka Road Partnership	25-Mar-98	$41,720	$54,384	Princeville Ag. Lots	25	high-value hardwood production	
(Paul Weissman, Manager)				Hanalei, Kauai		integrated with house lot development	
Mark Kimball	15-Dec-95	$140,144	$148,444	Holualoa, Hawaii	156	high value hardwood production	
(Craig Elevitch, Consultant)						native forest restoration	
Kaloko Mauka Cloud Forest		$87,500	$128,450	Kaloko Mauka	95	native forest restoration	
(several landowners)				(Kona District)			
Kapulena Orchards	15-Dec-95	$42,433	$45,816	Honokaa, Hawaii		high-value hardwood production	
(Jack Zimmerman, owner)				(Hamakua Coast)		silvopasture/agroforestry	
Linda & Michael Larish	11-May-01	$12,082	$12,082	Kurtistown, Hawaii	19.52	high-value hardwood production	
				(Puna)			
Maikai Ranch	12-Jul-96	$142,305	$154,065	Holualoa, Hawaii	320.7	high-value hardwood production	
(Desmond Twigg-Smith, Owner)						native forest restoration	
Michael & Kili Matsui	13-Aug-93	$5,935	$5,923	Wood Valley	39.8	high-value hardwood production	
(Roger Bason, Consultant)				(Kau District)		native forest restoration	

APPENDIX 2

Walter & Kathy Mendes	11-Feb-00	$19,538	$24,322	Hoolehua, Molokai	18	native dryland forest restoration
(Bill Sager, Consultant)				(north central)		traditional Hawaiian forest products
Molokai Ranch	1-Jul-92	$75,723	$75,723	Puu Nana, Molokai	425	watershed restoration
				(western south)		erosion control
Ookala Community Forest	27-Sep-02	$75,354	$119,016	Ookala, Hamakua	33	high-value hardwood production
(Laupahoehoe Train Museum)				Hawaii		native forest restoration
Sam & Tanya Paltin	3-May-94	$6,407	$6,407	Wood Valley, Hawaii	12	high-value hardwood timber production
(Rober Bason, Consultant)				(Kau District)		native forest restoration
Rex Provisor	21-Mar-94	$31,185	$35,615	Papa Area, Hawaii	17.5	native forest restoration
(Michael Robinson, Consultant)				(South Kona)		educational trails
W.H. Shipman Nene	1990	$10,000	$10,000	South Hilo	50	nene habitat restoration
Wood Valley Community	Jul-93	$21,550	$21,550	Wood Valley	34	high-value hardwood production
(several landowners)				(Kau District)		native forest restoration
Umikoa Ranch	23-Feb-96	$433,373	$866,750	Land of Kaala, Hawaii	850	Acacia koa timber production
(David Matsuura, Manager)				(upper Hamakua)		native forest/habitat restoration
Peter Ziroli	20-Jan-95	$4,460	$24,065	Laupahoehoe Ahupua	14	high-value hardwood production
(Michael Robinson, Consultant)				(Hamakua Coast)		native forest restoration
PROJECT TOTALS		**$4,014,768**	**$6,140,205**		**11388.6**	

The Big Island

Mary Dougherty

Mary is attempting to restore native forest vegetation on seven acres of her property in Manowai`opae Homesteads, near Laupahoehoe, Hamakua District on the Big Island. The former vegetation consisted primarily of non-native pasture grasses and common guava. Mary intends to employ an innovative silvopastoral system to control weeds until the native tree seedlings begin to shade the understory, at which time she will begin planting shorter stature native plants and shrubs. Proposed plantings include ohia lehua (*Metrosideros polymorpha*), koa (*Acacia koa*), kolea (*Myrsine lessertiana*), kopiko (*Psychotria hawaiiensis*), and naio (*Myoporum sandwicense*). The property is typical of many on the Hamakua Coast of the Big Island and it is hoped that Mary's efforts to re-establish native forest vegetation on land made unproductive by decades of agricultural use, might provide a valuable demonstration, inspiring others to do the same.

Shane and Chris Fox

Shane and Chris have established a 14-acre plantation of various high-value timber species on a former sugar cane field, on the Hamakua Coast above Laupahoehoe. Plantings include *Acacia koa,* pheasant wood (*Cassia siamea*), *Eucalyptus deglupta*, *Eucalyptus Microcorys, Flindersia brayleyana*, African mahogany (*Rhaya nyasica*), narra (*Pterocarpus indicus*), teak (*Tectona grandis),* and Australian red cedar (*Toona ciliata*). The various tree species are planted into small, pure, rather than mixed stands to avoid competition between species. The intent is to produce a small forest of quality trees that will provide income on a sustained basis. Shane and Chris also intend to incorporate some under story agroforestry crops such as awa, maile and mamaki that will provide additional, more immediate income.

Bari Green and Lou Russo

Lou and Bari are establishing a mixed forest stand of high-value tropical hardwood trees on previously unproductive cattle pasture, to supply local markets and woodworkers, while contributing to economic diversification on the Hamakua Coast. As participants in the FS Program, they will also develop information and plant materials useful to other landowners in the area, and throughout the state who may be contemplating similar endeavors on their former pasture or agricultural lots.

It remains a priority of the FS Program, to encourage projects like this that attempt to demonstrate the economic viability of high-value timber production, especially when harvest cycles are longer and the inherent risk associated with the relatively large up-front investment discourages many landowners from pursuing forestry as a potentially lucrative land-use. In areas like Hamakua and Puna, where holdings are being subdivided into relatively small parcels, smaller scale reforestation for high-value timber production may represent one of the best options for reclaiming some of Hawaii's best prime forestland. Also, by supporting smaller scale plantings of these potentially higher-value hardwoods, the Program intends to produce information that will reduce the risk perceived by larger-scale timber producers and investors.

Hawaii Rainforest Sanctuary

Landowner Norman Bezona is to restoring and protecting 62 acres of native mid-elevation koa-ohia cloud forest above Kailua-Kona on the Big Island.

The project area is located within the Kaloko-Mauka subdivision that is currently zoned as Ag-20. Most of the land within the 2000-acre subdivision has been divided into twenty-acre parcels. Resident agricultural and landscaping activities have already removed approximately 1000 acres of native forest and resulted in the establishment and spread of a variety of invasive non-native plant species similar to those that threaten remnant native forest areas throughout Hawaii. Also, as in many forest areas, feral pigs in the area frequently dig up the forest floor in search of food, destroying native forest regeneration.

Norm is committed to maintaining his property as a healthy, biologically diverse native forest area for demonstration, conservation and educational purposes. He has developed a technically sound plan for strategically removing weeds from the property and replacing them with native vegetation. Transect lines will be established on the property with flagging tape to ensure that all areas are periodically monitored. Norm has already constructed one mile of trails on the property and regularly hosts educational tours for organized civic and community groups including the Boy Scouts, Girl Scouts, 4-H, School, and University classes, and community garden, hiking and environmental clubs. He has also constructed an outdoor education center that includes instructional, library and other facilities, which complement the existing trail system. Future plans include a larger educational facility and an extensive trail network.

H&G Koa Enterprises

H&G Koa Enterprises, under the direction of Gwendolyn Hill, is establishing a 10-acre plantation of genetically superior native Acacia koa on degraded pastureland above Paauilo, on the Hamakua Coast of the Big Island. The project's primary objectives are: To produce quality koa timber for local industry consumption; to establish superior seed sources for future koa production; and to research various silvicultural treatments of koa.

All of the koa tree seedlings were planted in the fall of 1998. The area was first fenced to exclude pigs and grazing ungulates. H & G Koa used only genetically superior koa seed stock, collected with assistance from UH-CTAHR and the Hawaii Agricultural Research Center (HARC). The young koa seedlings were planted in various close spacing regimes and managed intensively to achieve high growth rates and high-value crop trees. HARC is collaborating with H&G Koa to closely monitor the plantation's development and keep detailed records for the life of the project.

Hamakua Hardwoods

Hamakua Hardwoods, Inc, under the management of Dr. Christian Giardina and Ingrid Dockersmith, has established a mixed forest stand of high-value tropical hardwood trees on formerly unproductive cattle pasture, to supply local markets and woodworkers, while contributing to economic diversification on the Hamakua Coast. As a participant in the FS Program, Hamakua Hardwoods, Inc. will also develop information and plant materials useful to other landowners in the area, and throughout the state who may be contemplating similar endeavors on their former pasture or agricultural lots. This, and similar commercial timber production projects, though small, can provide an array of benefits

including noxious weed suppression, increased biodiversity, wildlife habitat enhancement, enhanced site aesthetics and limited local employment. The Hamakua Hardwoods, Inc. management plan includes net present value and rate of return calculations that illustrate the economic viability of the

proposed project.

Kaloko Mauka Community

Four landowners in the Kaloko, Mauka subdivision above the Kona Coast have worked together to improve and protect an 80-acre area of relatively intact native forest. The Lorant, Weiss, Paul and Bezona families continue to remove and control forest weeds, and to construct educational trails through their forest properties.

The Kalopi Reforestation Project

Will and Judy Hancock have established corridors of native forest vegetation on their 60-acre property, located at Kalopi, South Kohala District, on the island of Hawaii. Their primary objective is to incorporate forest biodiversity with their current land use, which is cattle, and sheep pasture. The Hancocks have successfully planted several hundred *Acacia koa'ia* seedlings that they have found to be very drought and wind tolerant. They have also planted naio (*Myoporum sandwicense*) and Indian sandalwood (*Santalum album*) in areas now protected by previously established Acacia koa'ia stands and windbreaks. The species *A. koa'ia* has performed particularly well on this site.

The Hancocks have also successfully integrated their livestock operation with their reforestation activities by using their sheep herd as a weed control tool. In a study carried out with the University of Hawaii, CTAHR, they observed that, if managed properly, sheep can be used to graze around certain tree seedlings with minimal damage.

Kapulena Orchards

Landowner Jack Zimmerman is replacing his declining macadamia nut orchard with a productive agroforestry system that integrates high value timber species, improved mac nut trees, a productive silvopastural area for horses, a native ohia forest and a wildlife habitat corridor. His 42-acre property is located in the ahupua'a of Malanahae, approximately three miles west of Honokaa on the Hamakua Coast of the Big Island. Project manager Seppe Weisemeuller produces most of the seedlings for the project. He is planting trees that will produce fruit and/or timber when grown in relatively open pasture situation. Plantings currently include breadfruit (*Artocarpus communis*), jackfruit (*Artocarpus heterophyllum*), Eucalyptus spp., narra (*Pterocarpus indicus*), koa (*Acacia koa*), and mountain apple (*Eugenia malacsensis*). Throughout the planting area, Seppe is attempting to establish a permanent, productive ground cover including grasses and nitrogen-fixing legumes that will produce forage for his livestock while maintaining soil fertility and controlling erosion. He is attempting to achieve his stewardship objectives without the use of inorganic fertilizers and herbicides.

Mark Kimball

Mark's property is just above Holualoa in the Kona District of the Big Island. As is typical for this area, the property is long, narrow and sloping mauka to makai. Approximately 70 acres of the makai land, has historically been used for pasture and other agricultural practices. Mauka of this is 80 acres of native ohia forest that has been invaded by a number of weed species that are preventing the natural regeneration of native forest species.

On the makai area, Mark has established a plantation forest for long and medium-term, sustainable timber production using organically certifiable methods. Areas were incrementally prepared by grubbing brush into large windrows that follow natural land contours in order to prevent soil erosion. Seedlings were planted in a hexagonal layout that provides for more even spacing than the common rectangular layout. Leguminous cover crops were seeded over planting areas to enrich soils and control weeds that normally compete with young tree seedlings. Mark has planted mostly higher value timber species including narra (*Pterocarpus indicus*), rosewoods (*Dalbergia* spp.), Australian red cedar (*Toona australis*), koa (*Acacia koa*), teak (*Tectora grandis*), rainbow gum (*Eucalyptus deglupta*), and tallow wood (*E. Microcorys*).

On the mauka area, Kimball is attempting to restore good health to a mature ohia dominated forest by removing and controlling the weeds that compete with native forest species. He removes weeds with a low-impact, accurate excavator that does not disturb the native forest vegetation. He then fills forest gaps with plantings of koa, ohia and sandalwood.

Kopua Native Forest Restoration

Landowners Laura Brezinsky and Sara Barwise are protecting and restoring forty acres of native low elevation ohia forest near Mountain View on the Big Island. The project area is located within the Kopua Farm Lots subdivision that is zoned for agricultural use. The parcels within the subdivision were recently sold to a large number of individual landowners with various intentions for residential or agricultural development. It is likely that increased activity and disturbance in the area will result in the establishment and spread of a variety of invasive non-native plant species similar to those that threaten remnant native forest areas throughout Hawaii. Also, as in many forest areas, feral pigs frequently dig up the forest floor in search of food, destroying native forest regeneration.

Laura and Beth are committed to maintaining their land as a healthy, biologically diverse native forest area for demonstration, conservation and educational purposes. They have developed a technically sound plan for strategically removing weeds from the property and replacing them with native vegetation. They have thoroughly researched trail construction methods used for similar projects and designed a series of trails that will provide access for a variety of demonstration and education activities.

Linda and Michael Larish

Linda and Michael are receiving program assistance to transform an unproductive, degraded pasture area formerly covered with exotic sedges and grasses, into a productive forest area that is to be managed in an environmentally responsible manner for small-scale, sustainable timber production. Site

preparation and weed control activities are being carried out so as not to disturb or expose the soil, thus minimizing the potential for erosion. Planned harvesting activities will be incrementally scheduled for the relatively small single species planting blocks. Such incremental harvests are unlikely to produce any significant environmental impacts. Potential positive impacts include the addition of aesthetic beauty and value to the neighborhood, and demonstration of economically viable, environmentally responsible land use.

The management practices being carried out are relatively labor intensive and thus somewhat more costly, because no heavy equipment is being used. The Larishes hope to demonstrate, however, that their type of operation can be profitable, and the economic analysis that they have included in their

management plan indicates that what they propose is economically feasible given the higher-value timber species that they are including. Michael and Linda are also working with the Natural Resources Conservation Service to identify suitable under story intercrops such as awa, that will generate more immediate, annual revenues to help support their operation. They say though, that in addition to realizing an economic return for their efforts, they "hope to leave their children with an investment that will give them the resources that they need to build their homes". No other landowners in the Kea'au Ag lots are currently growing trees for timber production and the Larishes want to provide information that might encourage others to do as they are.

In areas like Puna, where holdings are being subdivided into relatively small parcels, smaller scale reforestation for high-value timber production may represent one of the best options for reclaiming some of Hawaii's forestland.

Maikai Ranch

Landowner Desmond Twigg-Smith is establishing 98 acres of exotic and native hardwood trees for timber production about two miles north of the town of Holualoa on the Big Island. Tree species include koa (*Acacia koa*), toon (*Toona ciliata*), pheasantwood (*Cassia siamea*), bigleaf mahogany (*Swietenia macrophylla*), rainbow gum (*Eucalyptus deglupta*), cocobolo, African mahogany, Spanish cedar, Jacaranda, *Tipuana tipu*, teak, Queensland maple and *Dalbergia* spp. Desmond is also restoring 126 acres of native forest area mauka of his timber plantation by removing weeds and encouraging natural forest regeneration.

The Matsuis

Michael and Kili Matsui have partially reforested their 40-acre upland pasture area in the Wood Valley Homestead District of Ka'u on the island of Hawaii. Their specific objectives include the establishment of a koa-dominant forest ecosystem; the stabilization of critical watershed soils; the enhancement of wildlife habitat and species diversity; the provision of a demonstration site for forest regeneration on former pasture land; and a long term income flow from thinnings and sustainable timber harvesting.

The Matsuis successfully planted a partial windbreak with 50 banana and 90 koa seedlings. They also planted 250 koa seedlings into the existing degraded forest on the upper portion of their property.

Ookala Community Forest

The community is receiving program assistance to improve and maintain the Ookala Community Forest as a demonstration for the Ookala and Hamakua communities that are exploring various land-uses as alternatives to sugar cane and other primary agricultural crops that have historically proven economically nonviable. In addition, the Ookala Community Forest Board intends to restore a lowland native forest area for educational and recreational purposes.

In July 2000, the Board of Land and Natural Resources approved a cooperative agreement involving the Department, the Laupahoehoe Train Museum, the North Hilo Community Council and the Laupahoehoe High School, to establish a demonstration forest at the site to provide long-term access to the community. Now known as the Ookala Community Forest, the area is intended to demonstrate sustainable and economically viable forestry practices.

Approximately 13 acres of the Ookala Community Forest have been planted with high-value tropical hardwood species. The Division of Forestry and Wildlife established three acres in 1993 for research and demonstration purposes, but the funding for the project was eliminated in 1995 and the area was quickly invaded by guinea grass. The Ookala Community has since, completely taken over and greatly extended management of the forest area to include many additional acres and promising timber species. Forest Stewardship Program funding will enable the necessary maintenance of these plantings, as well as the restoration of an additional 8 acres of lowland native forest for demonstration and educational purposes. Employing local expertise and innovative forest restoration techniques, the Ookala Community Forest will serve as a land-use model for farmers, students, landowners and other members of the public. The project will involve the community to explore the feasibility of producing hardwood timber on the Hamakua coast, using a wide variety of tree species to assess species success and varied maintenance and harvesting methods. The project site will also serve as a "living laboratory" for Laupahoehoe High School students

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Sam and Tanya Paltin

Sam and Tanya Paltin are reforesting their 12-acre property in the Wood Valley Homestead District of Ka'u in Hawaii County with native and non-native species including koa (*Acacia koa*), kukui (*Aleutites moluccane*), papala (*Charpentiera spp.),* a'ali'i (*Dodonea viscosa*) and mamani (*Sophora chrysophylla*). Their objectives include the provision of a demonstration site for forest regeneration practices on former sugar plantation land and the generation of a long-term income supplement through hardwood timber production. Plantings have included koa, ohia, mamane, a'ali'i. kukui, Australian red cedar and Indian rosewood.

The Paltins planted 2000 koa, 250 toon and 50 kukui seedlings on approximately 9 acres of the project area. Unfortunately, a neighbor's horses have destroyed some of the seedlings. Approximately 80% of the trees have survived.

Rex Provisor

Rex has successfully restored a 10-acre area of native forest on his property in the Papa area of the South Kona District on the Big Island. He also established a 3-acre woodlot of valuable timber producing species including koa *(Acacia koa*), Queensland maple (*Flindersia brayleyana*), toon (*Toona ciliata*), mamane (*Sophora chrysophylla*), sandalwood (*Santalum ellipticum*), and ohia lehua (*Metrosideros collina*).

Rex's biggest challenge was to remove and control under story weeds such as Christmas berry and guava, and thus to create a favorable environment for natural regeneration and planted under story seedling establishment. He and his family prefer to clear weeds by hand so as not to damage existing native under story plants. Rex successfully planted thousands of hardwood seedlings and native under story plants including kopiko (*Psychotria hawaiiensis*), mamaki (*Pipturus hawaiiensis*) olopua (*Osmanthus sandwicensis*) ti (*Cordyline terminalis*), and 'awa (*Piper methysticum*). He also constructed more than 6,000 feet of educational trails within the forest area that he restored. Tours to the site are especially popular with local school children learning to identify native forest species and their many uses.

Umikoa Ranch

Umikoa Ranch, under the direction of David Matsuura, is reforesting 850 acres of former pastureland between 4000 and 5000 feet in elevation above the Hamakua Coast on the northeastern slope of Mauna Kea. The landowner wants to recreate a large, concentrated tract of healthy koa (*Acacia koa*) forest within its native range.

Pasture areas of 100 to 200 acres are incrementally enclosed to exclude cattle, and then scarified to disturb the dense pasture grass, and to expose mineral soil and viable koa seeds. Seeds exposed to sunlight and moisture germinate within a few days. Various methods of scarification are being tested including bulldozing and burning. The survival of the young koa seedlings depends on their rate of growth compared to the aggressive non-native pasture grasses that quickly reestablish themselves after scarification. Controlled burns are being used in conjunction with targeted herbicide applications to speed seedling germination and stall pasture grass growth.

Tree seedlings are being planted where necessary, to fill in gaps and produce even seedling distribution.

WH. Shipman Nene

The landowner is maintaining an improved 60-acre nene habitat in a low elevation area near Keaau on the island of Hawaii. Management practices have expanded nesting areas and reduced predator threats. The project has also provided antibiotics and supplemental feed to improve nene health; improved nene loafing areas; and provided nesting structures.

Wood Valley Community

Three landowners of the Wood Valley Community on the island of Hawaii have cooperated in a reforestation effort to protect a critical watershed area, improve and stabilize degraded soils, enhance forest health, and provide high-value timber. Approximately 50 acres are currently under management.

Peter Ziroli

Peter Ziroli, a woodworker, is reforesting a 14-acre area of former sugar plantation land above Laupahoehoe on the Hamakua Coast with native and non-native tree species to supply himself with high-value timber. Peter is planting koa (*Acacia koa*), rainbow gum (*Eucalyptus deglupta*), kukui (*Aleurites moluccana*), Australian red cedar (*Cedrela toona*) and narra (*Pterocarpus indicus*). Part of the area is a streamside management zone, where he is replacing invasive weeds with native vegetation including 'ahakea (*Bobea* spp.), olapa (*Cheirodendron trigynum*), and hapu'u (*Cibotium glaucum*). He is also planting a windbreak of Monterey and sugi pine to protect his tree plantations from prevailing northeast winds. Peter wants to maintain the site's natural beauty and rural character, while providing opportunities for others to learn about reforesting former sugar plantation land.

Kauai

Hawaiian Mahogany Company, Inc.

The Hawaiian Mahogany Company, Inc., under the leadership of Bill Cowern, and made up entirely of local investors, is establishing 1600 acres of plantation forest in the Koloa area of Kauai to produce high-quality timber for local industry consumption. Tree seedling plantings are carried out in four yearly increments of 200 acres each. Most of the project area is being planted with a mix of rainbow gum (*Eucalyptus deglupta*) and tallow wood (*Eucalyptus Microcorys*), both high-value hardwoods with rapid growth rates and proven Pacific-region markets. The remaining 120 acres is being planted with longer-rotation timber species including low-elevation koa (*Acacia koa*), Rhodesian mahogany (*Afzelia quanensis*), African mahogany (*Khaya* spp.), Brazilian rosewood (*Dalbergia nigra*), Queensland maple (*Flindersia brayleyana*), and purpleheart (*Peltogyne purpurea*). Cowern is interplanting crop trees with nitrogen-fixing trees and ground-covers to provide organic nutrients, to control weeds and to protect surface soil. He has found that rows of Albizzia trees, between crop trees eliminate the need for inorganic nitrogen fertilizer applications. Bill has also identified potential markets for the Albizzia wood.

Batesole Hardwood Tree Farm

Allan Batesole is establishing a 7-acre high-value hardwood timber plantation on his bare, degraded, 7-acre property, - a former papaya plantation, near Mola'a on Kauai. Mr. Batesole's primary objective is to establish a long-term, future source of revenue for his children, while demonstrating to other landowners in the area that forestry is a viable land use alternative, even on very degraded former agricultural land. Allan's species selections include *Cassia Siamea, Cordia subcordata, Dalbergia sissoo, Eucalyptus deglupta, Erythrina sandwicensis, Khaya senegalensis, Tectona grandis, Thespesia populnea* and *Toona ciliata*. These species are arranged in the plantation according to their wind tolerance, shade tolerance, growth habit and aesthetics. To achieve the landowner's desire to create a planting that will look

more like a forest, and less like a plantation, plantings of different species have been arranged in a patch mosaic.

Kapaka Road Partnership

Architect Paul Weissman is attempting to create a property development model that integrates residential units with a working, high-value hardwood timber-producing forest area. This pilot project consists of five residential units within a Condominium Property Regime (CPR) on a 25-acre land area south of Princeville on the island of Kauai. The final, approved Forest Stewardship Plan has been incorporated as part of each CPR unit's deed, as a covenant that runs with the land. This means that no land transfer can occur without the future landowner/buyer agreeing to, and being bound by, the requirements of the Forest Stewardship Plan. This model could prove especially valuable on Kauai, where subdivision for residential development threatens existing forests in many areas.

Molokai

Kainalu Ranch

Mr. Lance "Kip" Dunbar, owner of Kainalu Ranch, is attempting to reforest several large blocks

of land, a total of 141 acres, to begin reclaiming his family property that consists of a large, degraded ahupua'a on the eastern end of Molokai. Continued grazing of this sloping property, in addition to frequent fires, has resulted in increased soil erosion and sedimentation of the near shore reef areas below his property. Kip's primary objective is to restore the watershed and native ecosystem functions of his property with large, incremental plantings of both native and non-native forest species. Non-native forest species will be used primarily as windbreaks and nurse trees to create a favorable environment for the restoration of native vegetation on this very harsh site, where high winds, frequent droughts and periodic fires threaten the success of any such project.

Pun Nana Reforestation

Landowner Molokai Ranch has been successful in reforesting 60-acre section of the degraded Puu Nana watershed on the western end of island near Maunaloa. Project objectives include the stabilization of degraded pasture soils, the establishment of a healthy mixed forest cover, and the provision of improved habitat for area wildlife. The Ranch planted more than 3,500 tree seedlings, mostly Eucalyptus species that have performed well in similar, harsh environments.

Walter and Kathy Mendes

Walter and Kathy Mendes are attempting to restore a dry land native forest on an 8-acre area of their property on north central Molokai. Their ultimate objectives include the provision of craft and furniture wood to local craftsman and the establishment of a cultural resource that can provide products for Hawaiian medicinal and cultural practices.

Lanai

Lanaihale Watershed Restoration

Castle & Cooke Resorts, LLC. is partnering with the state, through the Forest Stewardship program to protect and restore the only significant forested watershed on the island of Lanai. Program funds will contribute to the construction of a perimeter fence around the 3,588-acre primary recharge area of the watershed to exclude axis deer that browse on forest foliage, and trample young seedlings, preventing forest regeneration and causing extensive soil erosion. In addition, the Program will provide for the restoration of native forest vegetation on areas that have been degraded due to years of drought, heavy deer traffic, and the invasion of aggressive non-native plant species.

Oahu

Honouliuli Forest Restoration

The Nature Conservancy of Hawaii (TNCH) proposes to restore and manage native forest resources within specific areas of the Preserve in order to achieve the following primary objectives: 1) Contribute to the restoration of the Waianae Mountains Watershed and others by developing a restoration program that plans, implements and assesses forest restoration techniques that can be applied to a variety of sites throughout Hawaii; and 2) Create a model for community-based restoration by providing opportunities for partners and volunteers to learn about and take part in restoring and managing Hawaii's

imperiled biological resources. The restoration program aims to produce landscape-scale results by intensively managing "core" native plant communities and then connecting them with habitat management corridors. By infusing education, outreach and volunteer programs into the forest restoration program at Honouliuli, TNCH intends to build public support for conservation efforts statewide, and develop a force of skilled volunteers to augment the statewide conservation workforce.

TNCH will apply specific, intensive native forest restoration and wildlife habitat improvement management practices to approximately 550 acres within the 3,692 acres Honouliuli Preseve. In addition, TNCH will construct and maintain approximately 14,750 feet of trail to provide organized educational and recreational activities. Through its Forest Stewardship Agreement with the Department, TNCH is committed to maintaining the Honouliuli Preserve as a healthy, biologically diverse native forest area for demonstration, conservation and educational purposes through the year 2032.